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Hydrogeology • Mineral Resources Waste Management • Geological Engineering • Mine Hydrology

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June 6, 1986
Contract No. NRC-02-85-008
Fin No. D-1020
Communication No. 61

Mr. Jeff Pohle
Division of Waste Management
Mail Stop 623-SS
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: Monthly Report--May 1986

Dear Jeff:

This document constitutes the eighth monthly (May 1-31, 1986) progress report as required by Contract No. NRC-02-85-008. Williams and Associates, Inc. reviewed several documents this month for the Basalt Waste Isolation Project, for the Nevada Test Site and for the Palo Duro Basin. These document reviews are in draft and final forms. We are continuing our efforts on the required list of tasks outlined in the SOW. Details about our efforts on this contract are outlined based on Task and Subtask numbers.

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TASK 1

The following work was conducted under Task 1.

Subtask 1.1

This subtask has been completed.

Subtask 1.2

Written reviews were submitted for the following documents:

1. Benson, L.V., and McKinley, P.W., 1985, Chemical Composition of Groundwater in the Yucca Mountain Area, Nevada, 1971-84. USGS Open-file Report 85-484, Denver.

2. Byerlee, J., Morrow, C., and Moore, D., 1983, Permeability and Pore Fluid Chemistry of the Bullfrog Tuff in a Temperature Gradient. U.S.D.A. Geological Survey, USGS-OF-83-475.

3. Erdal, B.R., and others, November 16, 1981, Nuclide Migration Field Experiments in Tuff, G Tunnel, Nevada Test Site. International Symposium on the Scientific Basis for Nuclear Waste Management Materials Research Society, Boston, Mass., LA-UR-81-3141.

4. Langkopf, B.S., August 1982, Thermal Analysis of Nuclear Waste Emplacement in Welded Tuff. Sandia National Laboratories, Albuquerque, NM, SAND80-2639.

5. Lappin, A.R., and Nimick, F.B., April 1985, Bulk and Thermal Properties of the Functional Tuffaceous Beds in Holes USW G-1, UE-25a#1, and USW G-2, Yucca Mountain, Nevada. Sandia National Laboratory, Albuquerque, NM, SAND82-1434.

6. Martinez, M.J., January 1985, FEMTRAN-A Finite Element Computer Program for Simulating Radionuclide Transport Through Porous Media. Sandia National Laboratory, Albuquerque, NM, SAND84-0747.

7. Moore, D.E., Morrow, C.A., and Byerlee, J.D., June 1984. Changes in Permeability and Fluid Chemistry of the Topopah Spring Member of the Paintbrush Tuff (Nevada Test Site) When Held in a Temperature Gradient: Summary of Results. Lawrence Livermore National Laboratory, UCRL-15620, SANL 324-001.

8. Moore, D.E., Morrow, C.A., and Byerlee, J.D., 1984, Permeability and Fluid Chemistry Studies of the Topopah Spring Member of the Paintbrush Tuff, Nevada Test Site, Part II. U.S.D.I. Geological Survey, USGS-OF-84-848.

9. Peters, R.R., Gauthier, J.H., and Dudley, A.L., 1985, The Effect of Percolation Rate on Water Travel Time in Deep, Partially Saturated Zones. Sandia National Laboratory, Albuquerque, NM, SAND85-0854C.

10. Rechard, R.P., and Schuler, K.W., 1982, Permeability Change Near Instrumentation Holes in Jointed Rock. Sandia National Laboratory, Albuquerque, NM, SAND81-2584, 19 p.

11. Sass, J.H., Lachenbruch, A.H., and Mase, C.W., 1980, Analysis of Thermal Data from Drill Holes UE25a-3 and UE25a-1, Calico Hills and Yucca Mountain, Nevada Test Site. U.S.D.I. Geological Survey, USGS-OF-80-826.

12. Waddell, R.K., Robison, J.H., and Blankennagel, R.K., 1984, Hydrology of Yucca Mountain and Vicinity, Nevada-California--Investigative Results Through Mid-1983. USGS Water Resources Investigations Report 84-4267.

Williams and Associates, Inc. initiated the review of several additional documents during the month of May. Written summaries of these documents currently are being edited. These summaries will be forwarded under separate cover.

Subtask 1.3

Williams and Associates, Inc. is continuing to review the literature pertaining to potential conceptual models for NNWSI. We will continue to evaluate and update existing conceptual models as new data become available.

TASK 2

The following work was conducted under Task 2.

Subtask 2.1

This subtask has been completed.

Subtask 2.2

Written reviews were submitted for the following documents:

1. Clifton, P.M., January 1986, Groundwater Travel Time Analysis for the Reference Repository Location at the Hanford Site. Rockwell Hanford Operations, SD-BWI-TI-303.

2. Spane, F.A., Jr., March 1986, Preliminary Evaluation of Piezometer Responses at DC-19, DC-20, and DC-22, During Construction of DC-23W. Rockwell Hanford Operations, Richland, WA, SD-BWI-TI-313.

Subtask 2.3

Williams and Associates, Inc. completed the initial requirement under this subtask with the submission of our conceptual model letter report.

TASK 3

The following work was conducted under Task 3.

Subtask 3.1

This subtask has been completed.

Subtask 3.2

Several documents were reviewed and written reviews were forwarded to the NRC. In addition review work has begun on several more documents which should be finished within the next month. Written reviews were submitted for the following:

1. Dutton, A.R., and Orr, E.D., 1984, Geostatistical Analysis of Potentiometric Surface of the San Andres Formation, Texas Panhandle. Texas Bureau of Economic Geology, Austin, TX, OF-WTWI-1984-22.

2. Smith, D.A., Akhter, S., and Kreitler, C.W., 1985, Ground-Water Hydraulics of the Deep-Basin Aquifer System, Palo Duro Basin, Texas Panhandle. Texas Bureau of Economic Geology, Austin, TX, OF-WTWI-1985-16.

3. Smith, Andy, and Orr, E.D., December 1982, Use of Kriging to Estimate the Wolfcampian and San Andres Potentiometric Surfaces,, Palo Duro Basin, Texas Panhandle. Texas Bureau of Economic Geology, University of Texas, Austin, TX, OF-WTWI-1982-3.

Subtask 3.3

Williams and Associates, Inc. completed the initial requirement under this subtask with the submission of our conceptual model letter report.

TASK 4

This task has not been initiated. We are accumulating relevant documents during the course of our other activities under Tasks 1, 2, and 3.

TASK 5

Williams and Associates, Inc. are preparing two papers for the NRC. The first paper defines "uncertainty" with respect to hydrogeologic considerations and prediction of groundwater travel times. The second paper presents our views on the relationship of scale, hydrogeologic parameter quantification, and prediction of groundwater travel time.

Contractural Problems

No contractual problems have arisen.

Current Expenditures

A breakdown of individual hours and charges is shown on the attached table. Cumulative costs and projected costs are shown on the second table. The attached figure illustrates projected and current cumulative costs.

Sincerely,

Roy Williams/ep

Roy E. Williams

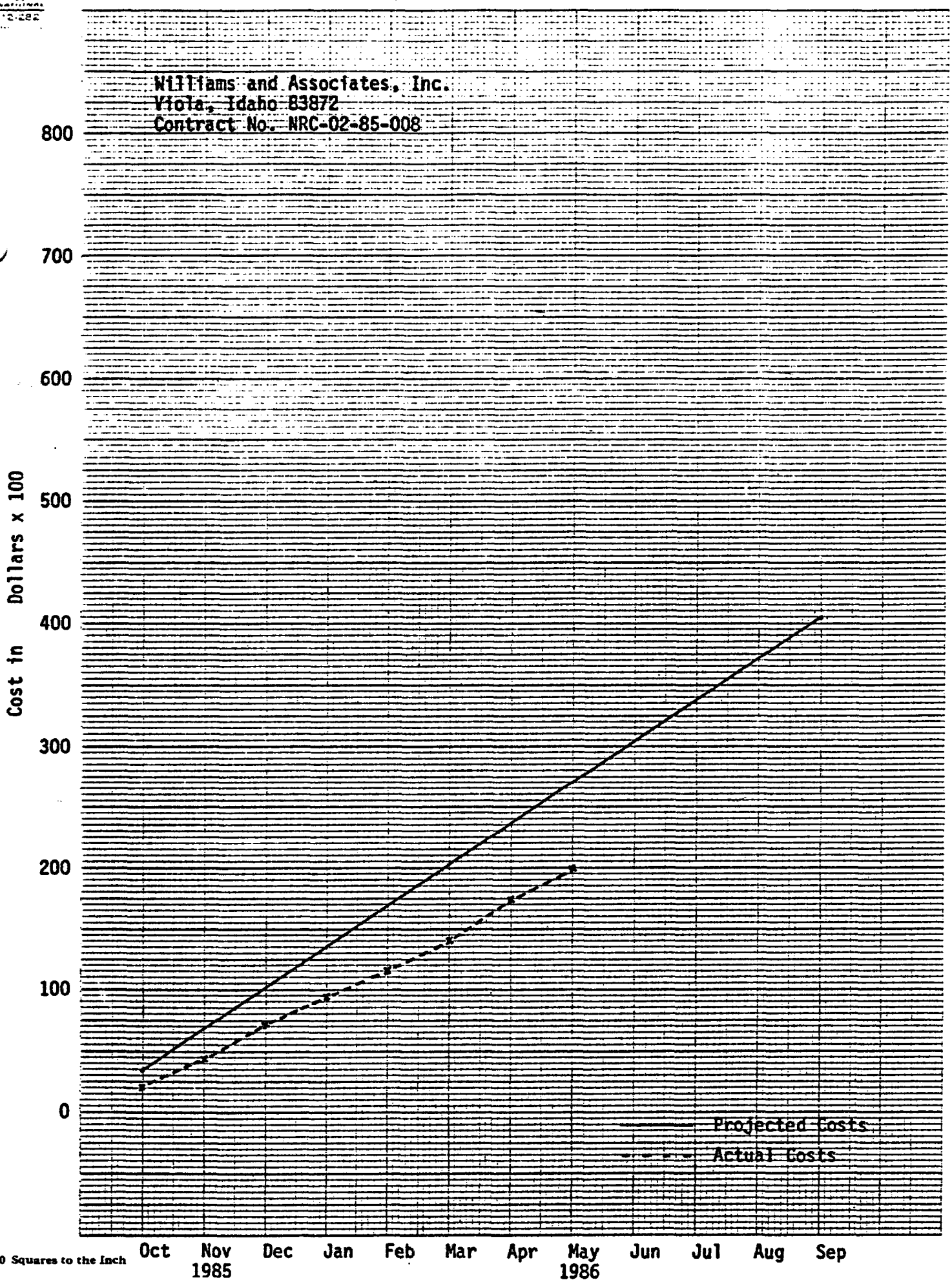
INDIVIDUAL HOURS AND CHARGES

	This Month (hours)	Cumulative (hours)	Cumulative (amount)
Roy Williams	64	520	$ 26,000
Gerry Winter	173.3	1,386.4	26,343.7
Jeff Brown	43	358	12,530
Jim Osiensky	116	928	17,632
Dale Ralston	8	119	5,236
Kirk Steinhorst	-	-	-
Terry Eckwright	11	109	1,641
Jack Sharp	-	25	1,000
Charles Smith	-	-	-
George Bloomsburg	33	186	7,440
Terry Howard	-	-	-
Stanley Miller	22	99	3,465
Noel Krothe	0	7.6	380
Richard Parizek	25.5	25.5	1,275

CURRENT AND CUMULATIVE PROJECT COSTS

Task	Current Month	Cumulative to Date* FY 86	Cumulative to Date* FY 87	Total to Date*
1	$ 10,170	$ 59,379	$-----	$ 59,379
2	5,880	54,483	-----	54,483
3	8,097	57,674	-----	57,674
4	-----	-----	-----	-----
5	873	27,629	-----	27,629
Total	25,020			

Percentage billed to total funds allocated = 49%.



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